REMARKS

Summary of Amendments

Independent claims 1, 6, and 13 have been amended to recite subject matter originally recited in dependent claims 3, 11 and 17.

Accordingly, claim 3 has been canceled; claims 11 and 17 have been amended to delete subject matter now recited in the independent claims from which they depend; and new claim 22 has been added to recite, in a claim depending from claim 1, subject matter common to claims 11 and 17 but apart from what has been added to claim 1.

Applicants note that claim 22 sets forth a unique feature of the present invention, in that the significance of the claim 22 recitations is that a portion of the claimed scanning range sensor is formed integrally with the motor. Furthermore, claim 22 is supported by Fig. 1 and by the description section in of the specification as filed, such that no new matter has been added.

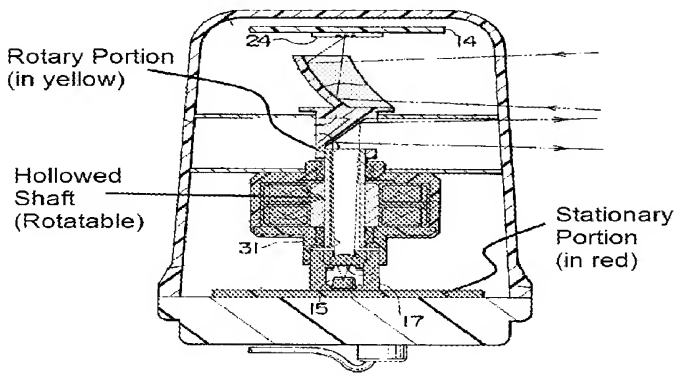
Claim Rejections - 35 U.S.C. § 102

Claims 1-4, 6, 7, 10, 11, 13, 14, 16, and 17 were rejected under 35 U.S.C. § 102(b) as being anticipated by U.S. Pat. No. 5,808,727 to Katayama.

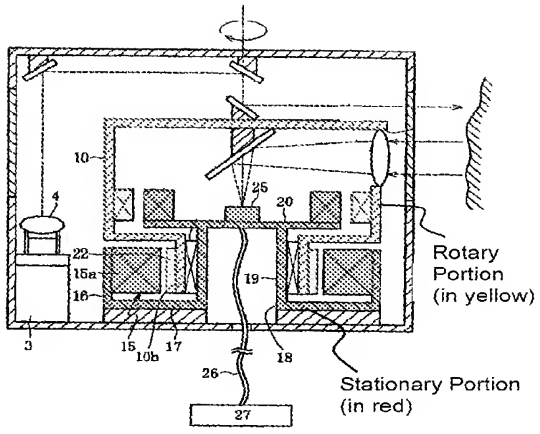
Applicants counter that the scanning range sensor disclosed by Katayama does not include, as a unique feature of the present invention and now recited in independent claims 1, 6, and 13, a stationary shaft having an axially extending through-hole, a wire axially extending in the through-hole, and a photodetector arranged on the stationary shaft.

Applicants note that what the Examiner maintains is a "stationary shaft" as indicated by reference mark 17 in Fig. 1 of Katayama is in fact a holder 17 (column 5, lines 5-19), with Katayama disclosing a hollow shaft 31 rotatably attached to a housing 33 (column 5, lines 21-23). Applicants respectfully assert that Katayama therefore does not disclose a structure having the stationary shaft that is one of the unique features of the present invention, such that advantages of the present invention cannot be achieved based on the disclosure of Katayama.

In particular, following a side-by-side presentation below of Fig. 1 from the Katayama reference and Fig. 1 from the present invention, Applicants give a comparative discussion of features of the present invention as now set forth in claims 1, 6, and 13 distinguishing the invention over Katayama.



KATAYAMA



Present Invention

In the configuration described in Katayama, a light emitting element 15 (or in a different embodiment, a light receiving element 24) is arranged below the hollow shaft 31, for a light beam to pass through the hollowed shaft. Therefore, the hollow shaft 31 must be of diameter large enough that the light beam may pass through. In addition, the configuration described in Katayama, in which the light beam passes through the hollow shaft 31, makes the focal length of the light beam loner than that of the present invention. Moreover, the hollow shaft 31, the light emitting element 15, light receiving element 24, and the light beam must be highly accurately aligned.

In Fig. 2, Katayama discloses a light-guide member 40, consisting of fiber optic cables made of resin or glass, filling the hollow shaft 31. This makes the structure of the hollow shaft 31 more complex, placing even greater demands on the accuracy of the alignment of the hollow shaft 31, the light beam emitted from the light emitting element 15, and the light receiving element 24.

In the present invention, however, a photodetector 25 is disposed on the stationary shaft 19, and a wire connects the photodetector 25 and a distance computation circuit to provide electrically converted signals to the circuit. With this configuration, the through-hole in the stationary shaft 19 may have a diameter as small as allows the wire to pass through. Moreover, since the light beam is received by the photodetector 25 arranged on the stationary shaft 19, the focal length of the light beam can be shorter than that of Katayama. One result of this feature of the present invention is that it enables the stationary shaft 19 to have a more simple structure that is of comparatively reduced outside dimension.

In conclusion, Applicants respectfully assert that, by the amended claims and foregoing discussion, subject matter that distinguishes the present invention over Katayama is now clear from claims 1, 6, and 13, as well as their dependent claims.

Allowable Subject Matter

Applicants gratefully acknowledge that claims 19-21 have been allowed. Now by the present amendments to the claims, Applicants respectfully urge that in addition to claims 19-21, the remaining pending claims are in condition for allowance.

Accordingly, Applicant courteously urges that this application is in condition for allowance. Reconsideration and withdrawal of the rejections is requested. Favorable action by the Examiner at an early date is solicited.

Respectfully submitted,

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